

We Claim:

1. An ultrasonic dental handpiece for holding a transducer for converting electrical energy into ultrasonic vibrations, the dental handpiece comprising:

5 a body rotatably receiving such transducer;

a rotator head engaging such transducer for rotation thereof; and

10 a retainer ring fixedly coupled to one of the body and the rotator head and rotatably coupled to the other of the body and the rotator head, such that the rotator head is rotatably coupled to the body.

15 2. The ultrasonic dental handpiece of claim 1, wherein the retainer ring is a metallic spring that can be compressed for installation within the rotator head.

20 3. The ultrasonic dental handpiece of claim 2, wherein the rotator head has formed on its inner surface a circular groove for fixedly engaging the retainer ring.

4. The ultrasonic dental handpiece of claim 3, wherein the body has formed on its outer surface a circular groove for rotatably engaging the retainer ring.

25 5. The ultrasonic dental handpiece of claim 1, wherein the body has formed thereon a plurality of linear grooves for mounting a hand grip.

30 6. The ultrasonic dental handpiece of claim 5, wherein the body has formed thereon a plurality of slots for locking the hand grip to the body.

7. The ultrasonic dental handpiece of claim 1, further comprising a coil assembly for exciting such transducer.

5 8. The ultrasonic dental handpiece of claim 7, wherein the coil assembly comprises a bobbin and at least one coil mounted on the bobbin.

10 9. The ultrasonic dental handpiece of claim 8, further comprising at least one O-ring mounted on the bobbin for forming a substantially water tight seal with at least one of the rotator head and the body.

15 10. The ultrasonic dental handpiece of claim 8, wherein the bobbin has an inner surface, which defines a cavity therethrough for transferring fluid from its proximal end to its distal end.

20 11. The ultrasonic dental handpiece of claim 8, further comprising an interconnect for coupling the coil assembly to a cable.

25 12. The ultrasonic dental handpiece of claim 11, further comprising a plurality of plug pins that are electrically connected between the at least one coil and the cable.

13. The ultrasonic dental handpiece of claim 1, wherein such transducer is a magnetostrictive type.

30 14. The ultrasonic dental handpiece of claim 1, wherein such transducer is a piezoelectric type.

15. An ultrasonic dental handpiece for holding a transducer for converting electrical energy into ultrasonic vibrations, the dental handpiece comprising:

a body rotatably receiving such transducer;

5 a rotator head engaging such transducer for rotation thereof; and

means for rotatably coupling the body to the rotator head, said means being fixedly coupled to one of the body and the rotator head and rotatably coupled to the other of the body  
10 and the rotator head.

16. The ultrasonic dental handpiece of claim 15, wherein the means for rotatably coupling is a metallic spring.

15 17. An ultrasonic dental unit comprising:

an insert comprising a tip and a transducer for converting electrical energy into ultrasonic vibrations; and

a handpiece comprising:

a body rotatably receiving the insert;

20 a rotator head engaging the insert for rotation thereof; and

a retainer ring fixedly coupled to one of the body and the rotator head and rotatably coupled to the other of the body and the rotator head, such that the rotator head is  
25 rotatably coupled to the body; and

a coil assembly for exciting the transducer.

18. The ultrasonic dental unit of claim 17, further comprising an electrical energy & fluid source for supplying  
30 electrical signals and fluid to the handpiece.

19. The ultrasonic dental unit of claim 17, wherein the retainer ring is a metallic spring that can be compressed for installation within the rotator head.

5 20. The ultrasonic dental unit of claim 17, wherein the coil assembly comprises a bobbin and at least one coil mounted on the bobbin.

10 21. The ultrasonic dental unit of claim 17, wherein the transducer comprises a stack of thin nickel plates.

22. The ultrasonic dental unit of claim 21, wherein the stack of thin nickel plates generate the ultrasonic vibrations when the coil assembly is energized.

15 23. The ultrasonic dental unit of claim 17, wherein the insert further comprises a connecting body disposed between and attached to the tip and the transducer.